

II. DESCRIPTION OF THE PROPOSED ACTION

The National Marine Fisheries Service's Office of Sustainable Fisheries proposes to continue implementing fisheries under the Pelagics Fishery Management Plan as they existed prior to December 27, 1999 (the date of implementation of emergency rules for the Hawaii-based longline fishery ordered by the court). Therefore, the management measures in place at that time for western Pacific pelagic fisheries under the Pelagics FMP, together with any regulations implementing the FMP, constitute the proposed action being considered in this Biological Opinion. The purpose of FMPs in general has been established by the Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. 1801 *et seq.*; MSA). The stated purpose of the Pelagics FMP is to maximize the net benefits of the fisheries to the region and the nation. NMFS' Office of Sustainable Fisheries proposes to take this action pursuant to the MSA.

NMFS has no specific regulations, pursuant to the Pelagics FMP, for non-longline pelagic fisheries in the western Pacific, including domestic troll, handline, pole-and-line or purse seine fishing activities, although the use of drift-gillnets is prohibited¹. If problems and issues arise in the future in these fisheries, the Pelagics FMP could be adjusted as necessary to accommodate the solutions. Background information on the Pelagics FMP, including principles of the Magnuson-Stevens Fishery Conservation and Management Act, the guiding objectives of the Pelagics FMP, and relevant amendments to the Pelagics FMP, is described in Appendix A.

The FMP includes initial estimates of maximum sustainable yields (MSY) for the stocks and sets optimum yields (OY) for these fisheries in the EEZ. Current regulatory measures in place provide that:

- Fishing for pelagic species in the western Pacific EEZ with drift gillnets is prohibited (52 FR 5987, March 23, 1987).
- Each vessel that longlines for pelagic species in the EEZ around American Samoa, Guam, CNMI, or other U.S. islands of the western Pacific, and vessels used to transport or land U.S. longline-harvested pelagic species shoreward of the outer boundary of these same EEZs, must be registered for use with a general longline permit and must keep daily logbooks detailing species harvested, area of harvest, time of sets, and other information. Also, longline gear in the western Pacific EEZ must be marked with the official number of the permitted vessel that deploys the gear (56 FR 24731, May 26, 1991).
- Each vessel that longlines for pelagic species in the EEZ off Hawaii, or is used to transport or land longline-harvested pelagic species shoreward of the outer boundary of the EEZ around Hawaii, must be less than 101 feet long and registered for use with one of 164 Hawaii longline limited entry permits (59 FR 26979, June 24, 1994) and must also keep daily logbooks

¹ The purse seine fishery this sentence refers to is being managed under the Treaty on Fisheries Between the Governments of Certain Pacific Island States and the Government of the United States of America (the South Pacific Tuna Treaty). Although they occur in the action area, these fisheries are not managed under the Pelagics FMP. These fisheries will be subject to separate section 7 consultation on the Treaty and will not be evaluated as part of the effects of this action.

- detailing species harvested, area of harvest, time of sets, and other information.
- As directed by NMFS, all vessels registered for use with a Hawaii longline limited access permit must carry a NMFS-owned "vessel monitoring system" transmitter (59 FR 58789, November 15, 1994).
- Hawaii-based longline vessels must carry a NMFS observer if directed to do so (55 FR 49285, November 27, 1990²; 58 FR 67699, December 22, 1993³).
- Longline fishing for pelagic species is prohibited in circular areas 50 nm around the center points of each of the NWHI, plus a 100 mile wide corridor connecting those circular closed areas that are non-contiguous (56 FR 52214, October 14, 1991). In the MHI, longline fishing is prohibited in areas approximately 75 nm around the islands of Kauaʻi, Niʻihau, Kaʻula, and Oʻahu, and approximately 50 nm off the islands of Hawaii, Maui, Kahoʻolawe, Lanaʻi, and Molokaʻi. This prohibition is lessened from October 1 through January 30, when the longline closed areas decrease on the windward sides to approximately 25 nm off Hawaii, Maui, Kahoʻolawe, Lanaʻi, Molokaʻi, Kauaʻi, Niʻihau, and Kaʻula, and approximately 50 nm off Oʻahu (56 FR 28116, June 14, 1991). Longline fishing is also prohibited in an area approximately 50 nm off Guam (57 FR 7661, March 2, 1992).

The FMP does not contain any management measures specifically applicable to vessels which use pole-and-line, troll and handline gear to harvest pelagic species in the Western Pacific Region. The territories of American Samoa and Guam and the CNMI do not specifically regulate pelagic fishing activities, although fishing vessel registration is required. The State of Hawaii (State) prohibits the sale of yellowfin and bigeye tuna (both known in Hawaii as *ahi*) smaller than three pounds landed by all domestic fisheries. The State also requires fishermen who sell any portion of their catch to hold a commercial marine license and file catch reports.

Longline vessels registered for Hawaii-based longline limited access permits are subject to the management requirements of the FMP throughout the Western Pacific Region, including the EEZ around U.S. possessions in the Pacific (Jarvis, Howland, Baker, Palmyra, Kingman reef, Johnston, Wake and Midway Islands) and the high seas off California. NMFS has no other regulations in place for domestic pelagic fishing activities in those areas.

1. Pelagic Fisheries of Hawaii

a. Hawaii Longline Fishery

²At the request of the Council, NMFS published at 55 FR 49285 (November 27, 1990) an emergency interim rule that placed regulatory conditions on the longline vessels that included permitting and logbook requirements, and required the placement of observers if a vessel intended to fish within 50 nm of certain islands of the NWHI and was requested to do by the NMFS Regional Administrator.

³NMFS was required to establish the observer program due to Terms and Conditions in the Incidental Take Statement from the Biological Opinion issued in June 1993.

The Hawaii-based longline fishery is a limited access fishery with up to 164 vessels (114 active), all 101 ft or less in length. These vessels participate in an international fishery for tuna, swordfish, and billfish on fishing grounds which extend beyond the U.S. EEZ. The fishery lasts all year. In 1998, the overall fishery involved 1,140 fishing trips, with landings of 26.6 million pounds and ex-vessel value of \$46.7 million (Table II-1). The fleet can be separated into three trip types, based on target species, fishing grounds, and operational characteristics. In this discussion, the trip types are tuna, swordfish, and mixed target. Data are available for 1999, but were not available in published format at the time of preparation of this Opinion. Where possible, information for 1999 is included in the less detailed tables.

Following a rapid expansion in longlining due to the development of local and export markets for fresh tuna and favorable yen/dollar exchange rates⁴, entry to the longline fishery was curtailed through a 1991 moratorium on permit issuance under Amendment 4 to the Pelagics FMP. In 1994, a limited entry program was implemented for the Hawaii longline fishery through another amendment to the FMP. The amendment established a ceiling of 164 transferable permits, and further limited fishing capacity by restricting maximum vessel length to 101 ft. All 164 transferable permits are currently allocated, although only 114 were registered for use with active vessels in 1998 and 1999.

⁴Participation in the longline fishery grew from 37 vessels in 1987 to 80 in 1989 and increased further to 141 in 1991.

Table II-1: Fishery Information for Hawaii-based Longline Fishery for 1998. Source: WPRFMC and Our Living Oceans 1999 Report *in* NMFS 2000a.

Area Fished	Hawaii EEZ (25 to 200 nm) and high seas
Total Landings	28.6 million lb
Catch Composition	24% bigeye tuna 24% pelagic sharks 12% albacore tuna 11% swordfish
Season	All year
Active Vessels	114
Total Permits	164 (transferable, Limited Entry)
Total Trips	1,140
Total Ex-vessel Value	\$46.7 million

(1) Observer Program for the Hawaii-based longline fishery

The Honolulu Laboratory of the Southwest Fisheries Science Center, National Marine Fisheries Service began sampling Hawaii-based longline fishing operations in 1990, because of unconfirmed reports of interactions between swordfish vessels and protected species, such as Hawaiian monk seals, sea turtles, and sea birds. Observers were placed on a voluntary basis aboard six swordfish longline vessels during July through October (Dollar et al., 1991) of that year. In November 1990, the Western Pacific Regional Fishery Management Council recommended emergency regulations, which NMFS approved and implemented, that required longline vessels intending to transit or fish in the 200 nm exclusive economic zone to obtain a permit, maintain a daily fishing logbook, and to not fish inside 50 nm of the Northwestern Hawaiian Islands unless an observer was aboard the vessel. Under this emergency regulations, four vessels were observed between January and March of 1991. In 1993, NMFS observed an additional six longline vessels between August and December on a voluntary basis.

NMFS established a mandatory observer program in February 1994, to better characterize and understand the effects of the Hawaii-based pelagic longline fishery on the incidental take of sea turtle, sea bird, and marine mammal populations. Initially, observers were placed aboard Hawaii-based longline vessels according to the Statistical Guidelines for a Pilot Observer Program to Estimate Turtle Takes in the Hawaii Longline Fishery (DiNardo, 1993). Using this approach, observer placements were distributed evenly across different strata based on target species and time. During each quarter, a pre-determined number of swordfish, tuna, mixed, or switcher vessels were randomly sampled by observers. The designation of the vessel type was determined by using logbook data from 1991 and 1992. Vessels which targeted tuna on 80% or more of their trips comprised the tuna trip type stratum, vessels which targeted swordfish on 80% or more of their trips comprised the swordfish trip type stratum, vessels which targeted a mixed catch on 80% or more their trips comprised the mixed trip type stratum, and vessels switching between targets (all other vessels) comprised the switcher trip type stratum. Overall observer coverage between 1994 and 1996 was between 4.3 and 5.7% (see Table

II-2).

In April 1997, the observer placement strategy changed to reflect the guidelines established in the NOAA Administrative Report, "Recommendations for Scoping the Sea Turtle Observer Program for the Hawaii-Based Longline Fishery," (Skillman et al., 1996). These guidelines recommended that observer coverage should be increased to at least 20% overall to obtain more reliable estimates of sea turtle take. However, because of a lack of funding, the Southwest Region began sampling approximately 5% of the overall fleet effort while focusing on the larger vessels, which were determined to account for 87% of the sea turtle takes. This was accomplished by targeting 44 large (> 70 feet in length) boat trips and 13 small (< 70 feet in length) boat trips per year based on fishing effort for that year. This strategy would provide an estimation of sea turtle take with a 90% confidence level and a relative error of 50%. Monitoring a percentage of the small boat sector allowed the potential for detecting large changes in the turtle take rate in that portion of the fishery. The observer data are used to estimate the incidental take of sea turtles, marine mammals, and seabirds and to verify logbook data which are considered reliable for calculating fishing effort and target species, but not for estimating incidental take of sea turtles or other protected species. Observer coverage between 1997 and 1999 was 3.3 to 4.1%.

Table II-2. Observer coverage of the Hawaii-based longline fishery using information collected by NMFS during the mandatory observer program started in 1994 (NMFS unpublished data).

Year	Number of Trips ¹	Observed Number of Trips ²	Percent Coverage ³
1994 ⁴	859	49	5.7%
1995	1,109	48	4.3%
1996	1,062	52	4.9%
1997	1,123	40	3.6%
1998	1,180	48	4.1%
1999	1,136	38	3.3%

¹ Based on dock round information collected by NMFS.

² Completed number of trips.

³ Observer coverage based on number of observed trips and dock round information.

⁴ Data from February 25 through December 31, 1994.

(2) General Summary of the Hawaii-based longline fishery

The longline fleet operates in two distinct modes based on gear deployment: deep-set longline by vessels that target primarily tuna and shallow-set longline by those that target swordfish or have mixed target trips. Many vessels use both strategies during the year, depending on market conditions and other factors. The differences between these two modes are in areas that include equipment for setting gear, longline gear preparation, and fishing depths and grounds. This section provides an overview of data for the longline fleet as a whole.

Gear. Compared with vessels targeting swordfish or mixed species, vessels targeting tuna typically are smaller and fish different grounds. Swordfish sets are buoyed to the surface, have few hooks between floats, and are relatively shallow. This same type of gear arrangement is used for mixed target sets. Tuna sets use a different type of float placed much further apart. Compared with swordfish sets, there are more hooks per foot between the floats and the hooks are set much deeper in the water column (> 109 meters at the center of the mainline sag). The hooks are also different for each target type. Swordfish sets generally use “J” hooks and tuna sets use “tuna” hooks, which are more curved than “J” hooks. In addition, tuna sets use *sanma*, or saury, for bait while swordfish fishing uses a combination of squid and lightsticks.

The Hawaii-based longline fleet includes a few wood and fiberglass vessels, and many newer steel longliners that were previously engaged in the fishery off the U.S. mainland (Hamnett *et al.* 2000). Around 1980 the Hawaii Department of Business and Economic Development provided funds for the construction of three steel longliners, the beginning of the re-emerging fleet. Entrants in the early 1990s were mostly steel-hulled vessels up to 101 ft in length, and their operators were former participants in the U.S. Gulf of Mexico and East Coast tuna and swordfish fisheries. These newer entrants are also characterized by a greater reliance on sophisticated electronic gear for navigating, marking deployed longline gear, and locating fish. The revitalized fleet also adopted more modern longline gear, using continuous nylon monofilament main lines stored on spools, and snap-on monofilament branch lines. In the mid- to late 1980s, a local longliner successfully experimented with catching swordfish to the north of the Hawaiian islands with lightsticks and monofilament line. Compared with traditional, tarred-rope longlines, monofilament gear is more flexible in configuration and can be used to target various depths more easily.

Effort. Hawaii-based longline vessels vary their fishing grounds by season and by target. Most effort is to the north and south of the Hawaiian Islands between latitudes 5E and 40E N. and longitudes 140E and 180E W (Figure II-1). Fishing effort is not uniform throughout the year: there is a seasonal lull in the number of trips and hooks set in the third quarter due to dispersion of the target species. The grounds cover a wide area and most are well beyond the 200 mile EEZ. Some of the more productive grounds are more than 1,000 km from port. These are the same grounds used by the international fleet of tuna and swordfish longliners.

The number of hooks set by the Hawaii-based longline fishery outside the U.S. EEZ almost doubled during the past decade. More hooks are set outside the EEZ, and in recent years the number of hooks set within the EEZ around the NWHI has decreased. The increase in catch in the 9-year period shown is not related to an increase in the number of trips (Table II-3). During this period the active number of vessels decreased, from 141 in 1991 to 119 in 1999 (16 percent), while the number of trips declined, from 1,670 to 1,137 in 1999 (32 percent). However, in that same period the number of hooks set rose by 55 percent (12.3 million hooks in 1991 to 19.1 million in 1999), while total catch was variable, between 18.4 million pounds in 1994 and 29.7 million pounds in 1995. The number of vessels operating in 1991 was an all-time high of 141, compared with 37 in 1987. Effort in number of trips increased accordingly.

Figure II-1: Longline Fishing Grounds and Hooks Set by Area for the Hawaii-based Longline Fishery, 1994-1998.
 Source: Ito *et al.* 1999.

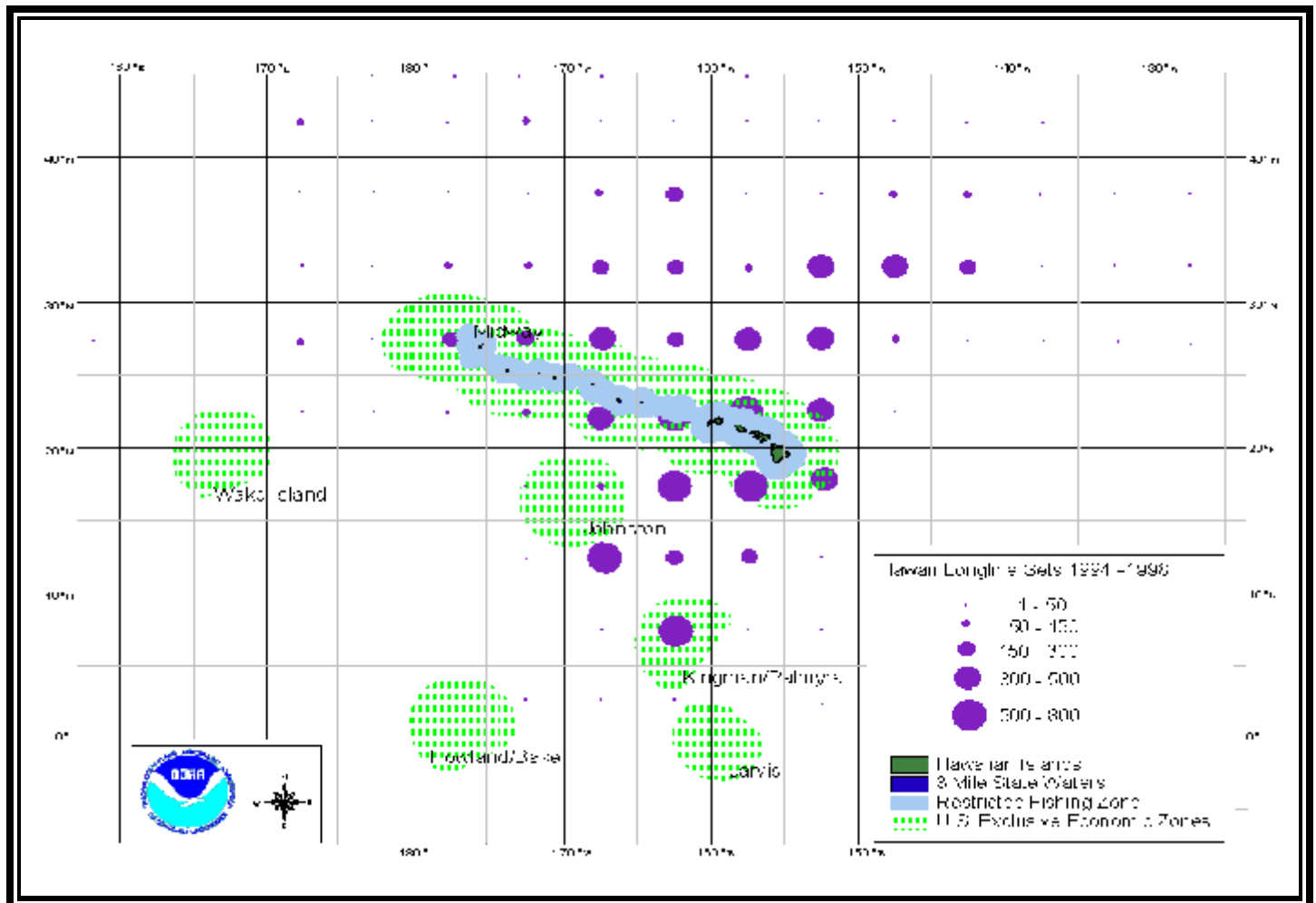


Table II-3: Number of Active Vessels, Total Catch, and Total Fishing Effort by the Hawaii-based Longline Fishery, 1991 to 1999. Source: Ito *et al.* 1999.

Year	Number of Active Vessels	Number of Trips	Total Catch ¹	Total Effort ²
1991	141	1,671	19.6	12.3
1992	123	1,266	21.1	11.7
1993	122	1,192	25.3	13.0
1994	125	1,106	18.4	12.0
1995	110	1,125	29.7	14.2
1996	103	1,100	21.5	14.4
1997	105	1,125	27.1	15.6
1998	114	1,140	28.6	17.4
1999 ³	119	1,137	22.2	19.1

¹ In millions of pounds

² In millions of hooks

³ NMFS, SWFSC-HL, preliminary and unpublished data.

The distribution of effort with respect to species targeted (based on catch composition) changed between 1991 and 1999. The number of trips targeting tuna rose steadily after 1992, from 542 to 776 trips. Trips targeting swordfish declined by more than 50 percent after 1994, from 319 in 1993 to just 69 in 1999. Mixed-target trips declined precipitously between 1991 and 1994, with a modest increase between 1994 and 1999.

(a) Deep-Set (Directed Tuna) Longline Fishery

Gear and Technique. Modern tuna longlining evolved from techniques developed in Japan several hundred years ago as a relatively simple method to harvest large yellowfin tuna and albacore (WPRFMC 1995). The longlining technique is preferred for harvesting large tuna for *sashimi* markets.

Longline gear consists of a main line set horizontally⁵. Branch lines (gangions) are clipped to the mainline at regular intervals, and each gangion has a single baited hook. One set of gear can consist of thousands of hooks clipped to a single mainline buoyed by floats and extending across many miles of ocean. Longlining allows a vessel to distribute effort over a large area to harvest fish that are not concentrated enough in numbers to be caught by other fishing methods, such as purse seining. Overall catch rates in relation to the number of hooks used on longline gear are very low (fish caught on 2 percent of the hooks set is considered a good catch rate) (WPRFMC 1995).

The main line is typically 30 to 100 km (18 to 60 nm) long, with 400 to 2,000 baited hooks set each day (the average is 800 in Hawaii's fishery). The branch lines are typically 11 to 15 meters (35 to 50

⁵Under the Pelagics FMP, "longline" gear means a mainline 1 mile or longer in length, suspended in the water column, to which are attached branch (also called dropper or gangion) lines with hooks. When used in the longline closed areas around the northwestern Hawaiian Islands, the definition is the same except that in those areas a "longline" consists of a mainline of any length (i.e., even mainlines less than 1 mile are prohibited).

feet) long. Radar reflectors and radio beacons are used to keep track of the line. To target deeper-swimming bigeye tuna, line shooters are sometimes used to deploy line faster than the vessel is traveling to allow the mainline to sink deeper. These deeper sets (for bigeye tuna, up to 400 m) use no lightsticks and often have 20 to 25 branch lines between the floats. Tuna fishers typically set gear deep by attaching more hooks (than swordfish gear) between floats (15 to 30 or more hooks per float). These fishers set and soak gear in the day and haul in the afternoon. They use *sanma* (saury) for bait, and do not use lightsticks (Ito *et al.* 1999).

Effort. The overall effort targeting tuna has been increasing in several ways. The number of vessels taking targeted tuna trips fluctuated annually in the 1990s and is now relatively stable at about 90. In 1999, there were 87 vessels targeting tuna. In 1998, the 92 vessels that targeted tuna made 760 trips (an average of 8.3 fishing trips per vessel), averaging 10.4 days of fishing per trip. However, the number of trips and hooks has been rising, so there are now more trips per vessel and more hooks per trip.

Federal logbooks containing catch and effort information extend only from 1991, following a requirement for vessels to maintain logbooks and catch records. The number of hooks deployed has risen constantly, from 5.2 million in 1991 to 15.4 million in 1999 (Table II-4).

Table II-4: Number of Vessels, Vessel Trips, and Hooks Used in Directed Tuna Longline Trips, 1991 to 1999. Source: Ito *et al.* 1999.

Year	Number of Active Vessels	Number of Trips	Number of Trips per Vessel	Number of Hooks ¹
1991	104	556	5.3	5.2
1992	55	458	8.3	5.3
1993	61	542	8.9	6.5
1994	83	568	6.8	7.0
1995	78	682	8.7	10.2
1996	76	657	8.6	10.4
1997	83	745	9.0	12.2
1998	92	760	8.3	13.5
1999*	87	776	8.9	15.4

¹ In millions of hooks

*NMFS, SWFSC Honolulu Laboratory, preliminary and unpublished data.

Tuna fishing effort (number of hooks) and fishing area change seasonally. Targeting particular species of tuna also changes the distribution of effort. In the beginning of the year effort is concentrated between latitudes 15°N. and 35° N. and longitudes 150°W. and 180° W. In the second quarter, fishing effort expands to the south and spreads further east and west to about longitudes 145° W. and 170° E. Fishing effort in the third quarter expands to its greatest extent, probably due to fishing effort for bigeye tuna. In the fourth quarter effort is more localized compared to the third quarter.

(b) Directed Swordfish and Mixed Swordfish/Tuna Longline Fishery

Gear and Technique. Trips that target swordfish, including mixed swordfish/tuna trips, are often interchangeable in terms of gear and operations. Line shooters are generally not used, although the depth of the gear can be manipulated by other methods such as changing the length of mainline between floats and the number of branch lines between floats. Shallow fishing also results in substantial catch of billfish such as blue marlin and striped marlin. Increasing numbers of vessels are fishing more opportunistically, with gear configured for tuna (with more hooks per set than would be used with swordfish gear), but fishing for swordfish at the same time, either in the same set or on the same trip.

As reported in WPRFMC (1995), a swordfish mainline is typically 30 to 100 km (18 to 60 nm) long, with 400 to 2,000 baited hooks set each day (a typical set is 700 to 1,000 hooks in the Hawaiian fishery). The branch lines are typically 11 to 15 meters (35 to 50 feet) long. Buoys are hooked to the mainline at about 500-meter (1,650-foot) intervals, and 10 to 20 meters (30 to 70 feet) of line are used to keep the mainline below the surface. Radar reflectors and radio beacons are used to keep track of the line. Four to six hooks are deployed between floats when swordfish are targeted, and the line is kept relatively taut so that it stays within the first 30 to 90 meters of the water column (WPRFMC 2000).

One longline set is made per day of fishing, and for very long main lines the deployment and retrieval may take almost 24 hours. Often the end of the line that was deployed first is retrieved last, so individual hooks at one end of the set may fish for a few hours, while hooks at the other end of the set may fish up to 24 hours, with an average soak time for all hooks of about 12 hours. Generally, the gear is set in the evening, soaked overnight, and hauled the following morning (Ito *et al.* 1999).

Squid is the primary bait used in the swordfish fishery. These fishers also use locally caught scad, imported squid, sardines, herring, and saury (WPacFIN). The introduction of chemical lightsticks in the late 1970s revolutionized swordfish longlining. These lights are attached by rubber bands or line clips to the branch lines about 2 meters (6 feet) above the hook. In the past, swordfish targeting vessels have used one lightstick for every two hooks, while mixed trips generally used either a 1-to-5 or a 1-to-3 lightstick-to-hook ratio (Ito *et al.* 1999). Lightsticks produce a chemical luminescence for up to 24 hours. The lights are available in a variety of colors and are thought to attract either small fish, upon which swordfish prey, or the swordfish themselves. The lightsticks are buoyant and of a shape and size that, if they are inadvertently lost from the branch line or discarded improperly, could create problems if ingested by marine mammals, seabirds, or marine turtles.

Effort. Swordfish are targeted based on water temperatures and thermocline, and fishing areas vary seasonally. During the 1991 to 1994 period, fishing during the first two quarters took place primarily north of the MHI in a broad swath. During the last two quarters it occurred over an even broader area, and catch rates from any one area were lower. In more recent years swordfish have been caught east of the MHI by longliners working the grounds on their way to Hawaii from California.

The numbers of boats used for trips targeting swordfish and mixed species have decreased since levels in the early 1990s (Table II-5).

Table II-5. Summary of Vessels, Trips, and Hooks by Trip Type by the Hawaii-based Longline Fishery, 1991 to 1999. Source: Ito *et al.* 1999.

	Year	Number of Active Vessels ¹	Number of Trips	Number of Trips per Vessel	Total Number of Hooks ²
Swordfish					
	1991	98	292	3.0	2.4
	1992	66	277	4.2	2.8
	1993	79	319	16.8	3.8
	1994	74	310	4.2	3.5
	1995	44	136	3.1	1.5
	1996	33	92	2.8	0.93
	1997	26	78	3.0	0.84
	1998	32	84	2.6	1.0
	1999 ⁴	31	65	2.1	0.7
Mixed trip ³					
	1991	94	823	8.8	4.7
	1992	72	531	7.4	3.7
	1993	59	331	5.6	2.8
	1994	51	228	4.5	1.5
	1995	49	307	6.3	2.4
	1996	51	351	6.9	3.1
	1997	44	302	6.9	2.5
	1998	50	296	5.9	2.9
	1999 ⁴	50	296	5.9	3.0

¹Not additive between swordfish and mixed trip vessels since a vessel may be counted separately in both

²In millions of hooks.

³Mixed trips target a combination of swordfish and tuna species.

⁴NMFS, SWFSC Honolulu Laboratory, preliminary and unpublished data.

Hawaii-based longline swordfish and mixed-trip fishing effort is not uniform throughout the year as there is a seasonal lull in the number of trips and hooks set in the third quarter. The percentage of hooks set in the third quarter represents 17.5 percent of the annual total number set. The numbers set in the first, second, and fourth quarters are about equal, with each representing 27.5 percent of the total sets made each year. During the third quarter, fishers schedule maintenance work, and some go east to fish off the U.S. mainland coast (Curran *et al.* 1996).

b. Hawaii Troll Fisheries

Trolling has a long tradition of use by small boat recreational and commercial fishers using simple gear (WPRFMC 1995). The fishery is composed of several sectors, including commercial trollers, charter, and recreational and expense fisheries (recreational/expense vessels sell all or a part of the catch to cover fishing trip costs).

(1) *Commercial Troll Fishery*

Commercial troll fisheries produce high-quality wahoo and *mahimahi*, as well as large yellowfin tuna, for the Hawaii market. Careful onboard handling and freshness of the fish yield a product that is highly valued in the marketplace.

Trolling is conducted by towing lures or baited hooks from a moving vessel, using big-game-type rods and reels as well as hydraulic haulers, outriggers, and other gear. Up to six lines rigged with artificial lures or live bait may be trolled when outrigger poles are used to keep gear from tangling. When using live bait, trollers move at slower speeds to permit the bait to swim naturally (WPRFMC 1995).

Part-time commercial trollers averaged less than half of the number of trips per year made by full-time trollers. Commercial troll vessels fish year-round, with peak catches in May. Commercial harvests are significantly lower September through January. Full-time pelagic trollers usually fish at an average distance of 5.2 to 7.9 miles from shore, with a maximum of about 28.7 miles from shore. Part-time pelagic trollers operate at greater distances from shore, with the average ranging from 4.9 to 28.8 miles, depending on the island from which the vessel operates. The maximum distance from shore ranges from 16.1 to 53.5 miles for part-time trollers (Hamilton and Huffman, 1997). Trollers fish where water masses converge and where submarine cliffs, seamounts, and other underwater features dramatically change the bathymetry. Drifting logs and other flotsam aggregate tuna, dolphinfish (*mahimahi*), and wahoo, and trollers search for these features during the fishing trip. FADS also increase fish aggregation, and waters near these manmade structures are preferred fishing locations (WPRFMC, 1995).

Most pelagic trollers conduct their operations as single-day trips lasting more than 8 hours, although a few vessels, primarily larger boats, engage in multi-day trips (Hamilton and Huffman, 1997; WPRFMC, 1995). In 1995-1996, full-time commercial trollers averaged about 168 fishing trips per year. Eleven of these trips were recreational, 134 were troll fishing, and the balance of 23 were other types of commercial fishing.

The State of Hawaii requires that all fishers on commercial fishing vessels have a license issued by the state. Applicants are asked to identify their primary fishing gear or method. A total of 3,658 fishers were licensed in 1997 and 3,657 were licensed in 1998. About 43 percent of total licenses in each year were issued to applicants that identified trolling as their primary fishing method (1,589 in 1997 and 1,574 in 1998) (WPRFMC 1999). A total of 21,112 troll trips were reported in 1998, down 11 percent from 1997 (Table II-6).

There are currently no regulations under the Pelagics FMP that affect the commercial troll fishery. However, commercial boats operating in the EEZ are required to follow state law. Consequently, boats in the commercial troll fishery are required to report their catch to the State of Hawaii. Commercial trollers have limited interaction with the longline fleet because the troll fleet usually fishes closer to shore than the 50 mile closure zone (or 25 miles in certain seasons) that is imposed on the longline fleet. The maximum fishing distance from shore reported by trollers was 53.5 miles.

Table II-6: Annual Troll Trips, 1979 - 1998.

Year	Number of Annual Trips
1979	10,185
1980	12,692
1981	11,975
1982	10,039
1983	12,842
1984	14,556
1985	15,291
1986	20,139
1987	23,391
1988	20,202
1989	18,924
1990	20,468
1991	23,184
1992	20,109
1993	20,647
1994	20,905
1995	23,527
1996	21,611
1997	23,674
1998	21,112

Source: WPRFMC 1999d.

(2) Charter Sport Fishery

The charter sport fishery is primarily a troll fishery focusing on billfish. The Kona Coast of the Island of Hawaii has a long-standing reputation as a premier location to fish for blue marlin, although charter sport fishing activity now occurs on all of the main Hawaiian islands. Primary targets are marlin and large yellowfin tuna. Wahoo is another popular target species.

Big game sportfishing rods and reels are used, with 4 to 6 lines trolled at any time with outriggers. Both artificial and natural baits are used. In addition to lures, trollers occasionally use freshly caught skipjack tuna and small yellowfin tuna as live bait to attract marlin as well as yellowfin tuna. Other baitfish, such as bigeye scad, mackerel scad, or strips of skipjack tuna may be used when a school of *mahimahi* is encountered.

Charter vessels fish year-round, focusing on target species that are available during different seasons. The vessels typically operate about 7.5 miles from shore, with an average maximum distance from

shore of 22.5 miles. The typical fishing distance from the home port is about 24.4 miles (Hamilton *et al.* 1998). The total number of active charter sportfishing vessels was estimated at 199 in 1997 (Hamilton *et al.* 1998).

There are currently no regulations under the Pelagics FMP that affect the charter fishery. However, commercial boats operating in the EEZ are required to follow state law. Consequently, boats in the charter fishery are required to report their catch to the State of Hawaii. Charter vessels have limited interaction with the longline fleet because the charter fleet fishes closer to shore than the 50 mile closure zone (or 25 miles in certain seasons) that is imposed on the longline fleet.

(3) Recreational and Expense Fisheries

In addition to the commercial troll fleet and the charter sport fleet, there is a large fleet of recreational boats that predominantly employ troll gear, some of which sell a portion of their catch to cover expenses (expense boats). These fishers primarily target pelagic species, with *aku* being the commonly landed fish for small troll vessels (21.9 percent of landings). Ahi was the second most commonly landed fish (18.2 percent), followed by *mahimahi* (13.9 percent), all marlin species (12 percent), and *ono* (6.6 percent) (Glazier 1999). The recreational and expense vessels operate primarily as trollers, and their fishing methods and other characteristics are similar to those described for the commercial troll fleet above.

Operators of recreational boats are not required to possess commercial fishing licenses or submit fish catch reports, but their boats must be registered. Operators of expense boats are required to report all of their catch on a monthly basis, whether it is sold or retained for other uses. The data are not broken out according to the motivation of the operator (to generate income, to cover expenses, or recreation only). Some individuals that sell a portion of their catch consider themselves recreational fishers and may or may not have a commercial fishing license (Hamilton and Huffman 1997). In addition, some fishers may sell large quantities of fish without holding a commercial fishing license or without filing catch reports (Hamilton and Huffman 1997; Glazier 1999). These circumstances make it difficult to evaluate the reliability of reported commercial catch data. The absence of reporting requirements for recreational vessels also makes it difficult to provide reliable information for those vessels.

The number of recreational and expense boats engaged in pelagic fishing is unknown. However, there are data that indicate the potential number of boats engaged in these fisheries. In 1998 there were an estimated 15,138 state-registered vessels in Hawaii, with 7,549 boats in the 16- to 40-foot range. Boats smaller than 16 feet can also engage in pelagic fishing, but larger boats have better seagoing capability and fuel capacity, which can result in more trips per vessel. More than 11,000 of the 15,138 state-registered vessels are kept on land and trailered to launching sites for fishing trips (Glazier 1999).

Activity by the small boat fleet increases or decreases according to the presence of targeted fish species. Almost 60 percent of vessel captains interviewed in 1996 reported that they fished year-round, and 36 percent reported that they fished only during summer months, when the peak of the *ahi* bite occurs (Glazier 1999). The boats concentrate their activities around FADs or around flotsam.

There are currently no regulations under the Pelagics FMP that affect the recreational and expense fishery. However, commercial boats operating in the EEZ are required to follow state law. Consequently, expense boats are required to report their catch to the State of Hawaii. Recreational and expense boats have limited interaction with the longline fleet because the recreational and expense boats fish closer to shore than the 50 mile(or 25 miles in certain seasons) closure zone that is imposed on the longline fleet. The usual fishing distance from shore for the recreational and expense boats is about 5.5 to 15.8 miles for recreational boats and 2.5 to 23.6 miles for expense boats with the maximum fishing distance from shore reported as 30.4 miles for recreational boats and 50 miles for expense boats.

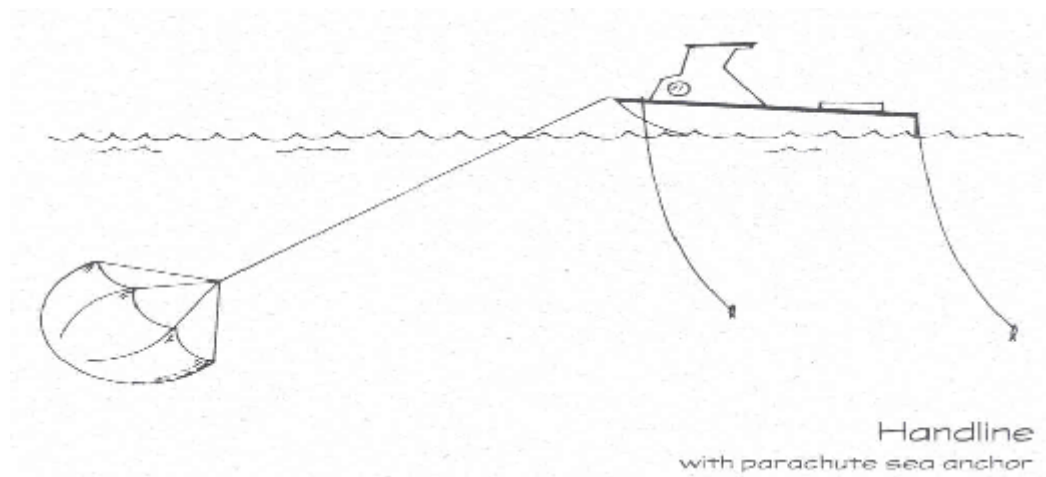
c. Hawaii Handline Fisheries

Handline fishing is an ancient technique used to catch yellowfin and bigeye tunas with simple gear and small boats. The technique was developed by Polynesians and Micronesians living on atolls and small islands (WPRFMC 1995). Handline gear is set below the surface to catch relatively small quantities of large, deep-swimming tuna that are suitable for *sashimi* markets. This fishery continues in isolated areas of the Pacific, and is the basis of an important commercial fishery in Hawaii (WPRFMC 1995). Three types of pelagic handline fishing methods are practiced in Hawaii, the nighttime *ika-shibi* (squid-tuna) method, the daytime *palu-ahi* (chum-tuna) method, and seamount fishing and weather buoy (which uses both handline and troll methods). A wide variety of pelagic fish are caught in both the day and night handline fisheries, but the composition of the handline catch is almost exclusively tuna, with yellowfin tuna predominating. Non-tuna species make up less than 10 percent of the catch (Hamilton and Huffman 1997).

The Hawaii handline fishery has nearshore and offshore components. The nearshore fishery targets large yellowfin and bigeye tunas. Nearshore areas have a public sector supported FAD system. The offshore fishery targets juvenile bigeye and yellowfin tuna around seamounts and weather buoys that are 50 to 320 km (35 to 200 nm) from shore (WPRFMC 1995). Some of the larger vessels are able to fish near sea mounts and weather buoys located 100 to 200 nm from shore. These vessels use a combination of handline and troll gear and have trip lengths averaging 5 days (Hamilton and Huffman 1997).

When the fishing area is reached, a parachute sea anchor is deployed to slow the vessel's drift while the fishermen engage in fishing. Figure II-2 illustrates a simple handline vessel using a parachute-type anchor.

Figure II-2: Sketch of Handline Vessel. Source: WPRFMC 1995.

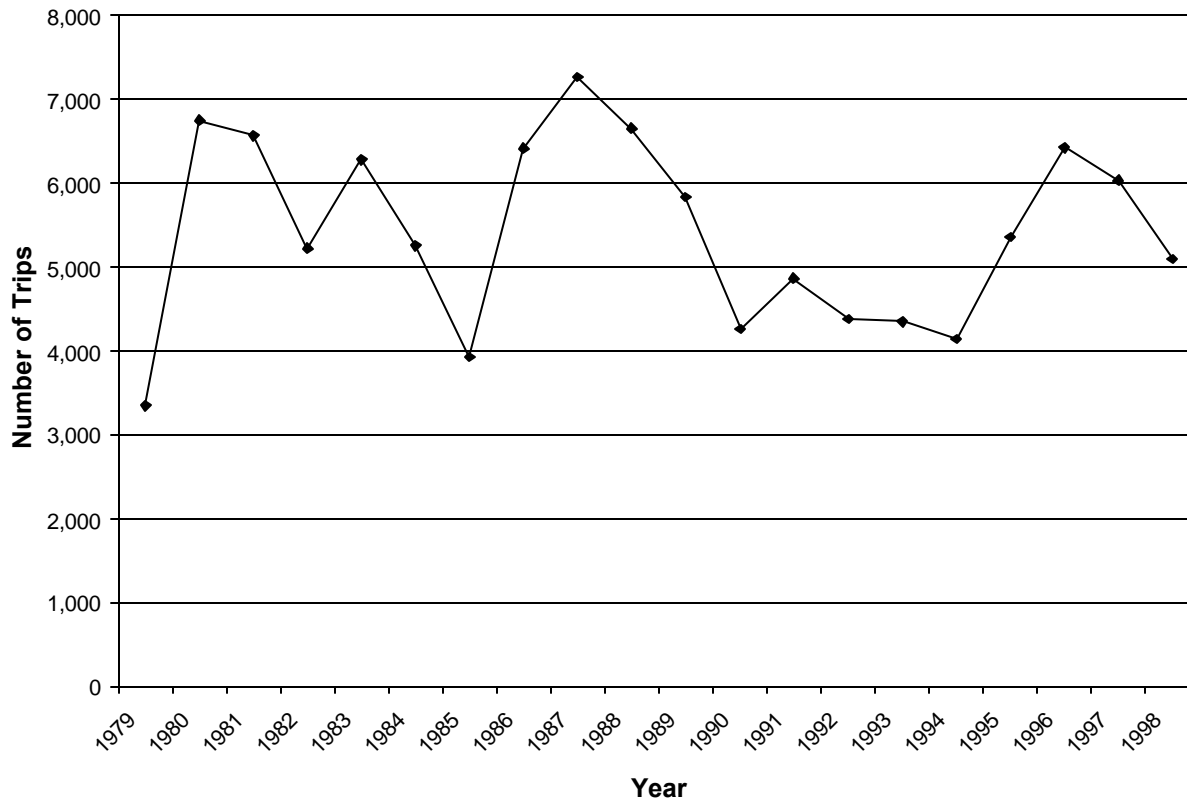


In the nighttime *ika-shibi* fishery, three to four handlines are set, each consisting of a long nylon rope connected to a dacron or polypropylene mainline attached to a monofilament nylon leader. The hook is usually baited with mackerel scad, and is lowered with a lead weight. To attract baitfish and tuna, a low-wattage light bulb is placed in the water, and the surface is chummed with chopped squid and/or chopped anchovies (WPRFMC 1995).

The daytime *palu-ahi* technique adds a weighted, retrievable bag stuffed with chum that is opened at a depth of 120 to 140 meters (400 to 650 ft), releasing the bait to attract tuna to the baited hooks. When a fish is hooked, it is manually hauled in, gaffed and then killed with a bullet or wooden bat.

After a low period in the late-1980s to mid-1990s, the number of commercial handline trips was relatively high in 1996 and 1997. Figure II-3 illustrates that although the number of trips dropped by 16 percent in 1998, it remained within range of the number of trips conducted since 1979 (WPRFMC, 1999d). A total of 5,091 commercial handline trips were reported in 1998, down 16 percent from 1997 (WPRFMC, 1999).

Figure II-3: Hawaii Commercial Pelagic Trips by Handline Gear, 1979-1998. Source: WPRFMC 1999d.



Note: Data were compiled from Hawaii Department of Aquatic Resources commercial catch reports (preliminary as of May 1999) using unique license number-date combinations for species caught > 0 (zero-catch trips are not included). 1997 data were updated with more complete data available in 1999. Non-commercial data are not available (WPRFMC, 1999).

There are currently no regulations under the Pelagics FMP that affect handline vessels. However, the fishery potentially could be affected by changes in regulations governing longline vessels. The changes would directly affect only the longline fleet, but depending on the changes that occur, the potential exists for indirect effects on all Hawaii fisheries.

d. Hawaii Pole-and-Line Fisheries

In Hawaii the pole-and-line fishery is known as the *aku* fishery, the Hawaiian term for skipjack tuna. The primary targets of the pole-and-line method are skipjack tuna and juvenile yellowfin tuna. This fishery is also called the bait boat fishery, because of its use of live bait. The pole-and-line fishery is a labor-intensive, highly selective process. Live bait is broadcast to entice tuna to bite on barbless hooks with feather skirts. During the fast and furious catching activity, tuna are hooked on lines and in one motion swung onto the boat deck by crewmembers (WPRFMC 1995).

The number of vessels participating in the Hawaii pole-and-line fishery has declined from its peak

several decades ago. In 1991, the Hawaii pole-and-line fishery had only 6 boats – and only 4 of these were operating full-time. Table II-7 provides a summary of the Hawaii pole-and-line fishery for 1998. The table, based on a similar table in WPRFMC 1999, shows that the 6 active vessels in the Hawaii pole-and-line fishery landed more than 696,000 pounds PMUS, more than 99 percent of which was skipjack tuna.

Table II-7: Fishery Information for Hawaii Pole-and-Line Fishery, 1998.

Area Fished	Inshore and EEZ
Total Landings	696,000 pounds
Target Species	Skipjack tuna
Catch Composition	99.6 percent skipjack tuna
MSY/OLO Status	Skipjack tuna: 2,000,000 mt/“under”
Season	All year
Active Vessels	6
Total Permits	NA
Total Trips	223
Total Ex-vessel Value	\$932,000

Source: Adapted from NMFS 2000a, which was based on Ito and Machado, 1999, and Our Living Oceans, 1999.

Pole-and-line fishing is conducted year-round (NMFS 2000a). However, during the summer season (April to September) larger skipjack tuna move into Hawaii waters in greater abundance. In the 1970s and 1980s, most of the catch came from areas around O‘ahu, Kaua‘i, Moloka‘i, and Lana‘i. By 1993, all of the vessels were working out of Kewalo Basin or Kaneohe Bay on O‘ahu (NMFS 2000a). The availability of bait fish and the distance from the home port influence the location where the Hawaii pole-and-line fishing activity occurs (Kawamoto 2000 *in* NMFS 2000e).

In this fishery, hooks and lures are attached by line to bamboo or fiberglass poles. The lures are made of chrome, feathers, and soft plastic. The hooks are barbless. Single poles are normally used, but more than one pole can be attached to one lure to bring in a large fish. The poles range from 2.13 to 4.88 meters (7 to 16 ft) in length; the line is 2.13 to 3.96 meters (7 to 13 ft) long, with a wire leader approximately 0.49 meters (1.6 ft) long. Poles and line are of equal length. Automatic poles can be used in place of crewmembers (WPRFMC 1995). Some boats may be equipped with seawater spray systems, which are used to stimulate a feeding frenzy and to conceal the boat. Bird-detecting radar units are sometimes used to help the crew locate schools of fish.

Most Hawaii boats go out at dawn and return to port at dusk (NMFS 2000a). The crew scans the horizon while cruising for feeding bird flocks, which indicate the presence of a school of fish.

After a school of fish is located, the vessel is positioned in front of the school. Live bait in the form of anchovies, herring, and sardines is thrown out into the oncoming school of fish. The seawater spray system is activated to stimulate the fish to begin a feeding frenzy. Fishing stations are located in the bow, stern, and port foredeck. The fish that bite the lures are pulled onto the vessel and removed from

the hook in one swift motion. The line and lure are returned to the water to continue the process. This rapid pace is continued until the fish stop biting. Within 10 to 20 minutes, 1 to 4 tons of tuna can be caught. After a catching session, the vessel is cleaned and the search for more tuna resumes (WPRFMC 1995).

The pole-and-line fishery is a highly selective fishery resulting in very little bycatch. Skipjack tuna accounts for 90 to 99 percent of the total catch (NMFS 2000a). The incidental catch is primarily *mahimahi*. In areas near reefs, seamounts, fish aggregation devices (FADs), drifting logs, and flotsam, there may be *kawakawa* (black skipjack), frigate mackerel, and rainbow runner mixed in with the skipjack tuna. Bycatch is sold or retained for personal consumption by the crew (WPRFMC 1995; NMFS 2000a).

The output of the pole-and-line fishery is approximately 1 percent of output of the entire Hawaiian pelagic fishery, and contributes a minor amount to the overall fishery. It is a selective fishery, and does not generally interact with protected species. In spite of the demand for its high-quality fishing product, the labor-intensive nature of the fishery, specifically capturing live bait, has led to its decline.

There are currently no regulations under the Pelagics FMP that affect the pole-and-line fishery. However, fishers must comply with State of Hawaii licensing and reporting requirements. At the present time it does not compete with the Hawaii longline fleet for fishing areas. Although the Pelagics FMP does not have a direct impact on the pole-and-line fishery currently, the fishery is governed by the plan, and future changes to the plan could have a direct impact.

e. Pacific Remote Island Areas (PRIA) Troll and Handline Fishery

There is a small pelagic troll and handline fishery in the PRIA, which includes EEZ waters around Howland, Baker, Jarvis, Wake, Midway, Palmyra, Kingman Reef, and Johnston Atoll. The above discussions of troll and handline fisheries off of Hawaii describe both fishing methods. This section, therefore, is limited to describing the extent of fishing activity and the targeted species in this fishing area. Currently, it is thought that more than 10 vessels are active in the fishery.

There is limited knowledge of fishing activity and effort in the PRIA because of limited reporting requirements for vessels active in this fishery. Longline vessels that fish in EEZ waters around the PRIA must be registered under a longline general permit or the Hawaii-based longline limited access permit. These vessels have federal reporting requirements. There are no federal reporting requirements for commercial troll and handline vessels targeting pelagic species in these areas. The only existing reporting requirement for recreational and charter vessels in this area is a U.S. Fish and Wildlife Service requirement for maintaining a "Midway Sports Fishing Boat Trip Log." This requirement applies to fishing within the Midway Atoll National Wildlife Refuge. The log, however, need not include any information about interactions with protected species.

Two Hawaii-based troll and handline vessels are known to have fished recently in EEZ waters around Palmyra and Kingman Reef targeting pelagic (including yellowfin and bigeye tuna, wahoo, mahimahi,

and sharks) and bottomfish species. Catch and effort data on these vessels are unavailable.

Five charter vessels are known to be based on Midway, two of which troll for pelagic species. The other three are used for nearshore and lagoon fishing. Approximately seven vessels are maintained and used for recreational fishing by Midway residents. Three of these are known to troll for pelagic species including yellowfin tuna, ono, and marlin.

2. Pelagic Fisheries in American Samoa

American Samoa-based pelagic fisheries consist of a small fleet of *alia* longliners, a few mid-size and larger longliners, and a small fleet of trolling vessels. In addition, the U.S.-owned distant-water pelagic purse seine fleet delivers much of its catch to canneries in Pago Pago, the capital city of American Samoa.

a. Troll and Longline Fishing

Table II-8 contains a summary of the American Samoa-based trolling and longline fisheries managed under the western Pacific Pelagics FMP. The table indicates that the 26 active longline vessels landed more than 97 percent of the total Pelagic Management Unit Species harvested.

Table II-8: Pelagic Fishery Information for American Samoa, 1998.

Gear:	Longline	Troll/Charter
Area Fished	Inshore and EEZ	Inshore and EEZ
Total Landings	884,000 lb	25,271 lb
Catch Composition	72% albacore tuna 8% yellowfin tuna < 5% all others	74% skipjack tuna 6% barracuda 4% yellowfin tuna
Season	All year	All year
Active Vessels	26	19
Total Permits	50 (open access)	NA
Total Trips	2,359	123
Total Ex-vessel Value	\$976,913 ¹	\$22,017

Source: Adapted from WPRFMC 1998 Annual Report and Our Living Oceans 1999, in NMFS 2000a.

¹ The ex-vessel value of longline landings as originally listed in the source document was determined to be inaccurate. The value shown in this table was estimated by subtracting the value of troll landings from the total estimated value of commercial landings.

The following inset text describing the longline fishery in American Samoa was taken directly from WPRFMC 1999.

“The general longline fishery consists of vessels that fish under a Western Pacific

general longline permit. This permit allows the vessel to fish for PMUS using longline gear in the EEZs around American Samoa, Guam, the Commonwealth of the Northern Mariana Islands (CNMI) or other U.S. island possessions excluding the Hawaiian Islands. Unlike Hawaiian longline permits the number of Western Pacific general longline permits is not restricted. As of 1998, there were 48 general longline permitted vessels in American Samoa, three in Guam and one in the CNMI, however, only those based in American Samoa [26 vessels] were active during 1998.

“Prior to 1995, the non-purse seine pelagic fishery in American Samoa was largely a troll-based fishery. In mid-1995 four vessels began longlining and by 1997, 33 vessels had permits to longline. Approximately 17 of these were actively fishing on a monthly basis. In 1998, only 26 of the 50 federally permitted longliners actually fished. These 26 vessels reported total landings of 884,000 pounds in 1998.

“Apart from a few larger (> 40 ft) inboards, longlining out of American Samoa generally takes place on *alias*, twin-hulled (wood with fiberglass or aluminum) boats about 30 feet long, and powered by small gasoline outboard engines. Navigation on the *alias* is visual using landmarks. The gear is stored on deck attached to a hand crank reel which can hold as much as 10 miles of monofilament mainline. Participants set between 100 and 300 hooks on a typical eight-hour trip. The gear is set by spooling the mainline off the reel and retrieved by hand cranking back onto the reel. Currently most fishing is done within 25 miles of shore, but with better equipped vessels, fishing activity may extend further. Generally, gear setting begins in early morning; with retrieval in the mid-morning to afternoon. The catch is stored in containers secured to the decks or in the hulls. Albacore tuna is the primary species caught followed by skipjack tuna and yellowfin tuna. Most fish are sold to large scale canneries, but some are sold to restaurants, and donated for family functions.

“A NMFS longline general permit is required for longline fishing in American Samoa’s EEZ. This fishery is presently open access, with no limits on the number of longline vessels, individual or total vessel capacity, catch or effort. A control date of November 13, 1997, has been established and some applicants for longline permits after that date are informed that they may not qualify for exemptions to limitations placed on longline vessels greater than 50 ft in overall length. In anticipation of the possibility of a limited entry program for domestic longline fishing vessels, the Council and NMFS have established a control date of July 15, 2000, after which any vessel of any size entering the fishery will not be assured of being allowed to use longline gear to fish for pelagic management unit species in the EEZ around American Samoa (WPRFMC, 2000).”

Table II-9 summarizes the number of vessels, by length distribution, owned by longline permit holders. Figure II-4 shows the number of annual active boats in the pelagic fishery in American Samoa. From 1992 to 1997, the number of participating boats increased, which likely reflects the addition and

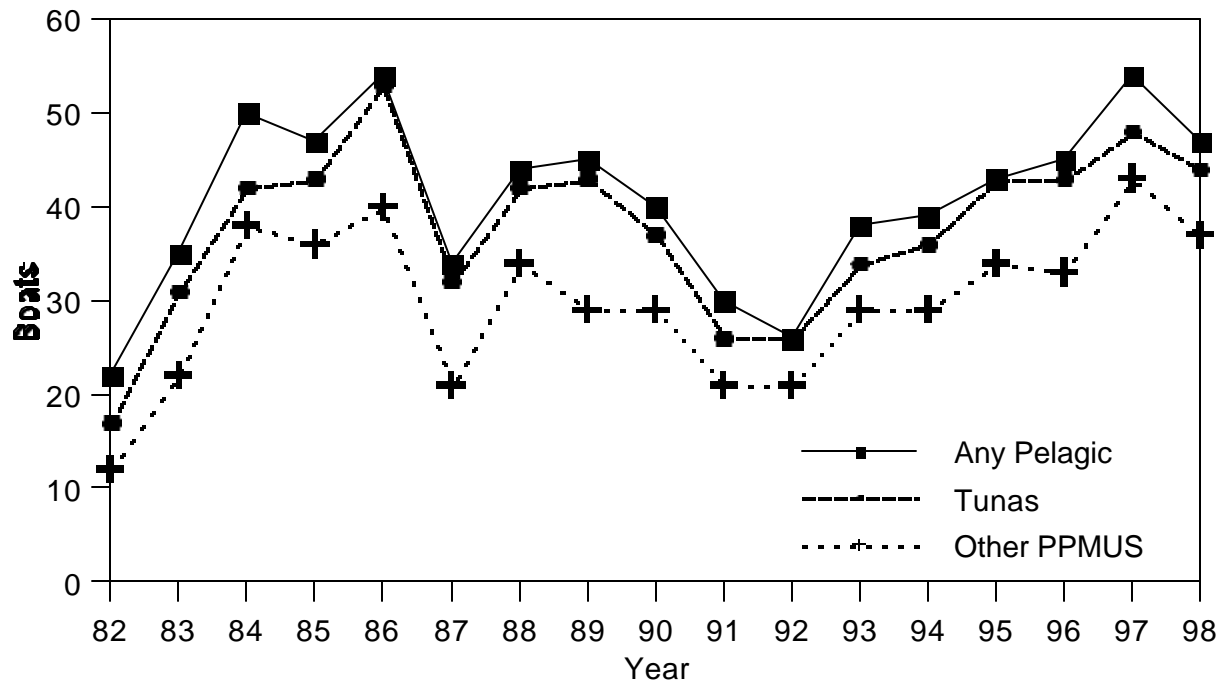
buildup of the domestic longline fleet.

Table II-9: Longline Permit Holders Based in American Samoa, November 2000.

No. of Vessels, by Length Overall					
< 30 ft	31-35 ft	35-40 ft	41-45 ft	46-50 ft	50+ ft
42	13	11	2	1	16

Source. NMFS PIAO.

Figure II-4: Number of Active Boats in the American Samoa Pelagic Fishery, 1982-1998.



Note: The sampling program is extensive enough, and the number of boats is small enough, to allow use of raw data base counts of the number of vessels in a given year. Each boat counted in the figure made at least one recorded landing of at least one pelagic species during a given year.

Table II-10: Profile of Vessels of Different Sizes Operating in American Samoa and Neighboring Samoa Domestic Longline Fisheries. Source: Mulipola 2000; pers. comms. in Samoa and American Samoa in WPRFMC 2000.

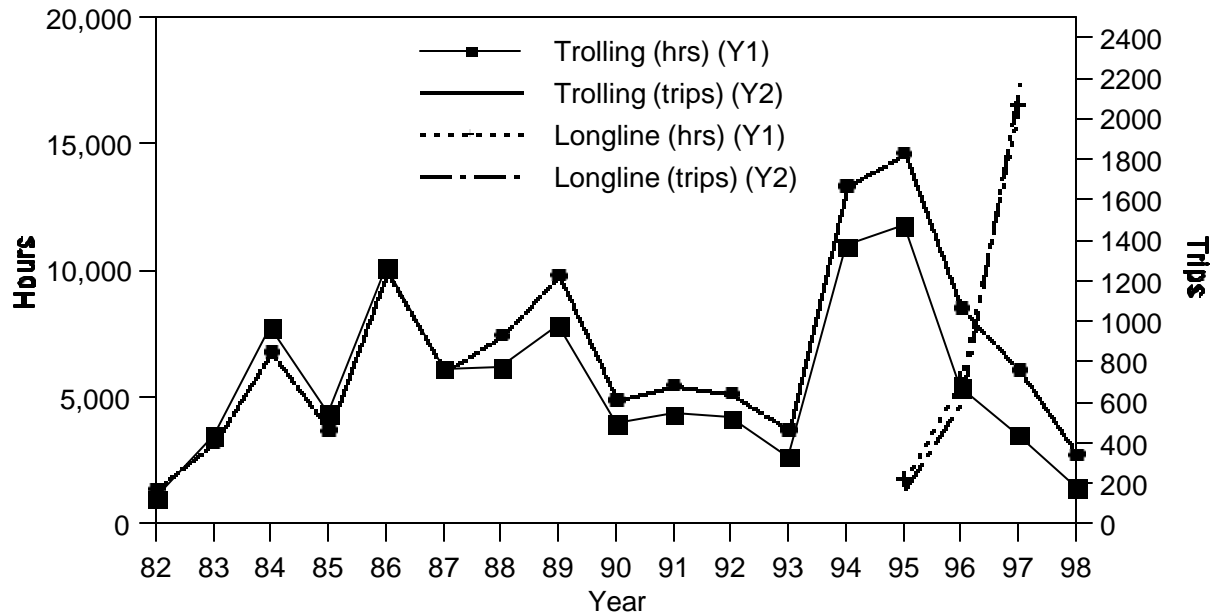
Vessel Size and Type	28 ft <i>Alia</i>	40 ft <i>Alia</i>	50+ ft Monohull
Purchase price (USD)	\$25,000	\$60,000	\$250,000
Miles of mainline set	7-10	20-25	35-50
Sets/trip	1-2	up to 4	6-8
Hooks/set	250-350	500-900	1,200-1,600
Trips/year	100-200 (weather-dependent)	50	40
Hooks/year	30,000-60,000	160,000	400,000

Table II-11: Profile of Domestic Pelagic Fishing Fleet Operating in EEZ of American Samoa, October 2000. Source: American Samoa Department of Marine and Wildlife Resources (DMWR), October 2000 vessel identification in WPRFMC 2000.

Vessel Length (ft)	No. of Vessels by Regular Port			No. of Vessels by Fishing Method ¹		Areas of EEZ Fished	Generally Safe Fishing Range
	Tutuila	Aunu'u	Manu'a	Longline	Troll		
< 30	45	7	7	18	41	< 20 nm from port	< 50 nm from port
31-40	22	1		13	10	< 50 nm from port	50+ nm from port
41-50	3				3	50-100 nm from port	200+ nm from port
50-90	4			4		Entire EEZ	Hundreds of nm from port
> 90	1			1		Entire EEZ and beyond	Several thousand nm from port

¹ In this section of the table, vessels may be counted in both gears.

Figure II-5: American Samoa Fishing Effort for Pelagic Species, 1982-1998¹. Source: WPRFMC 1999.



¹For 1982 to 1994, estimated total annual landings were used as a base for estimating trolling effort. The resulting number was divided by the average trolling catch per unit effort (CPUE) in hours to give an estimate of the total hours trolled. Trolling CPUE was calculated using only those trips in which trolling was the only method used, and for which the number of hours was recorded. The number of trips was calculated by dividing the estimated total hours of effort by the average length of a trolling trip. For 1995, 1996, and 1997, total longline landings were subtracted from the total landings prior to using the above calculation, standardizing non-longline effort to trolling effort (WPRFMC 1999).

Table II-11 shows a profile of the domestic pelagic fishing fleet currently operating in the EEZ of American Samoa. Figure II-5 shows the fishing effort, in number of hours (Y1) and trips (Y2), by trolling and longline vessels in American Samoa from 1982 to 1998. The increase in longline effort and decrease in trolling effort beginning in 1995 reflect the switchover by vessels from trolling to the more profitable longline fishing.

There are currently no regulations under the Pelagics FMP that affect the American Samoa pelagic fisheries. However, domestic longliners are required to obtain general permits. Similarly, the FMP does not have regulations that currently restrict the activities of the distant-water purse seine fleet. Although the Pelagics FMP does not have currently have a significant impact on the domestic fleets fishing within the EEZ around American Samoa, fishing within the EEZ is governed by the plan, and future changes to the plan could have a direct impact.

3. Pelagic Fisheries Operating out of the Territory of Guam

Pelagic fishing vessels based out of Guam fall into two broad categories: (1) distant-water purse seiners and longliners that fish primarily outside the EEZ around Guam and transship through Guam; and (2) small, primarily recreational trolling boats that are either towed to boat launch sites or berthed in

marinas and fish only local waters (within the EEZ around Guam or in the adjacent EEZ around the Northern Mariana Islands. As of 1998, there were three vessels with general longline permits in Guam, but none were active (NMFS 2000a). Quantitative information about participants in the Guam troll fisheries is currently unavailable. This discussion covers primarily the local small boat pelagic fishery (WPRFMC 1999).

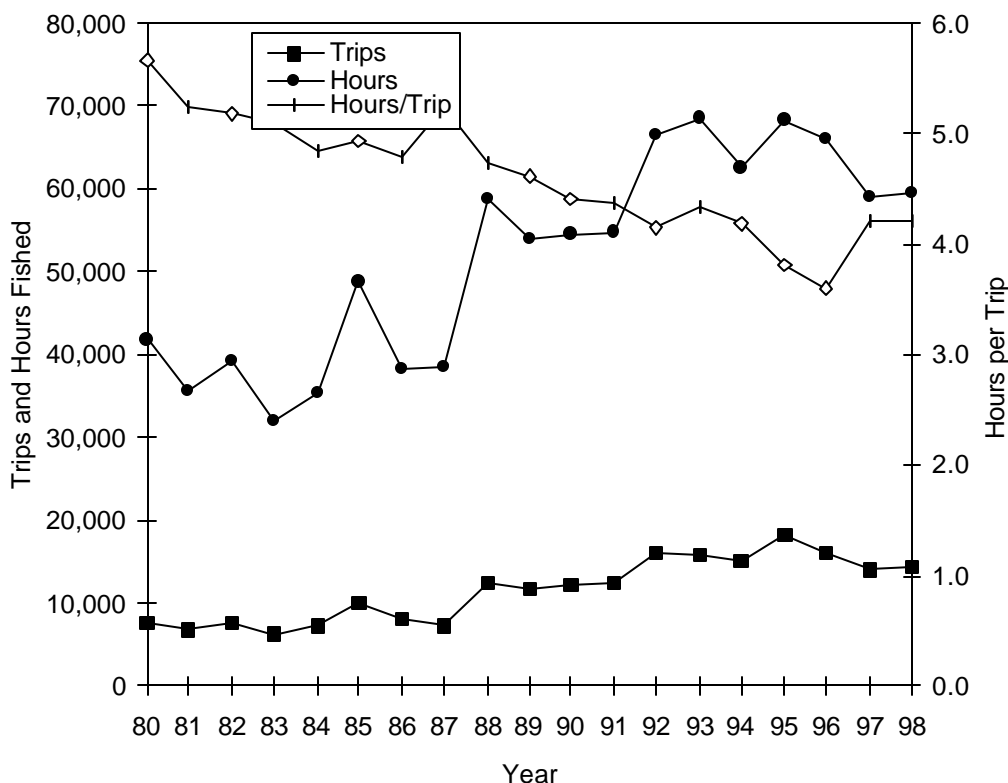
Table II-12: Pelagic Fishery Information for Guam, 1998. Source: Ito and Machado, 1999; Our Living Oceans 1999 Report, *in* NMFS 2000a; WPRFMC 1999.

Gear:	Troll/Charter
Area Fished	Inshore and EEZ
Total Landings	817,087 lb
Targets and Catch Composition	3% mahimahi 2% skipjack tuna 1% yellowfin tuna
Season	All year
Active Vessels	438
Total Permits	NA
Total Trips	14,324
Total Ex-vessel (Commercial) Value*	\$711,066

*Data are available for commercial value, and unavailable for noncommercial values.

In Guam, trolling with lures and baited hooks and lures is conducted from catamarans and other small commercial, recreational, and charter vessels in coastal waters, near seamounts, or around FADs. As shown in Figure II-6, the trolling effort remained virtually the same in 1997 and 1998.

Figure II-6: Annual Estimated Number of Pelagic Trips, Total Hours Fished, and Average Trip Length, Guam, 1980-1998. Source: WPRFMC 1999.



Note: The data are from the Division of Aquatic and Wildlife Resources offshore creel sampling program and its associated computerized data expansion system files. The expansion system is run on a calendar year's worth of survey data to produce catch and effort estimates for each fishing method surveyed. These plots are of the estimated hours spent fishing and number of trips for the trolling method, as taken directly from creel survey expansion system printouts (WPRFMC 1999).

4. Pelagic Fisheries in the Commonwealth of the Northern Mariana Islands

The CNMI is a string of islands in the western Pacific Ocean (longitude 145E E., and latitude 14E N. to 21E N.). Although inhabitants live on three primary islands: Saipan, Rota, and Tinian, pelagic fishery activities occur primarily from the island of Farallon de Medinilla south to the island of Rota. Commercial, subsistence, and recreational fishing are practiced.

Trolling is the most common fishery in the CNMI, with bottomfishing and reef fishing also conducted (Glazier 1999). This fishery is on the increase, most likely due to increasing population in CNMI (WPRFMC 1999). All domestic commercial fishery product is consumed locally. The product is skipjack tuna, although yellowfin and *mahimahi* are targeted to a lesser degree, and are easier targets for the local fishermen during seasonal runs. Because skipjack are common in nearshore waters off the CNMI, these fish are caught with minimal travel time and fuel costs. Most trips are less than a full day. Trolling for skipjack tuna takes place throughout the year. The *mahimahi* season is February through April, and the yellowfin season is April to September (WPRFMC 1999). The pelagic fishing fleet,

other than charter boats, consists primarily of vessels less than 24 feet in length, which usually travel in a limited 20 mile radius from Saipan (WPRFMC 1999).

No large-scale longline or purse seine activity occurs around the CNMI at this time. However, fishery development consultants for the CNMI have suggested providing incentives for a longline fleet to move into CNMI waters (University of Hawaii 2000). If longline fleets move into the CNMI, the domestic commercial fisheries will be affected. Currently only one vessel in CNMI has a general longline permit, which allows the vessel to fish with longline gear in the EEZs of CNMI, Guam, and American Samoa. This vessel was not active as a longliner in 1998 (WPRFMC 1999). Table II-13 provides a summary of the CNMI-based troll and charter fishery for 1998.

Table II-13: Pelagic Fishery Information for Commonwealth of the Northern Mariana Islands for 1998. Source: Ito and Machado, 1999; Our Living Oceans 1999 Report, *both in* NMFS 2000a.

Gear	Troll/Charter
Area Fished	Inshore and EEZ
Total Landings	192,568 lb
Catch Composition	70% skipjack tuna 11% mahimahi 8% dogtooth tuna 6% yellowfin tuna
Season	All year
Active Vessels	89 ^a
Total Permits	NA
Total Trips	2,230
Total Ex-vessel Value	\$398,086

Note: Available data currently include only commercial landings on Saipan – no data from other CNMI islands are included. Comprehensive data showing the total number of vessels that landed PMUS in CNMI do not exist.

^aThis number was estimated by counting the individual fishers that made commercial landings of skipjack tuna in Saipan (WPRFMC 1999).

To fish commercially within the EEZ around the CNMI, all U.S. vessels must have a longline permit issued by NMFS. All fishing boats, regardless of size, must register with the CNMI Department of Public Safety (DPS) (WPRFMC 1999). According to WPRFMC 1999, about 82 percent of all boats registered with the DPS participated in some form of fishing activity in the CNMI in 1998 (75 full-time commercial, 65 part-time commercial, and 143 subsistence/ recreational). Of the registered vessels, 24 were charter vessels, which generally retain their catch and sell to local markets (WPRFMC 1999). The amount of charter boat sales is not known. However, it constitutes a small portion of the local fish market, and most fish are typically consumed by the charter crew (Hamm *et al.* 1999).

Figure II-7 shows the estimated number of trips with pelagic fish landings in the CNMI, based on invoices for commercial landings for 1983-1998. As the figure shows, the number of trips increased

steadily after 1990.

Figure II-7: Number of Reported Commercial Fishing Trips with Pelagic Landings in CNMI, 1993-1998. Source: WPRFMC 1999.



Note: Total trips for all pelagic species were derived from the Commercial Purchase Data Base. Trips were calculated based on the assumptions that no fisherman made more than one trip per day, and that all sales from a single trip were made on a single day (WPRFMC 1999).